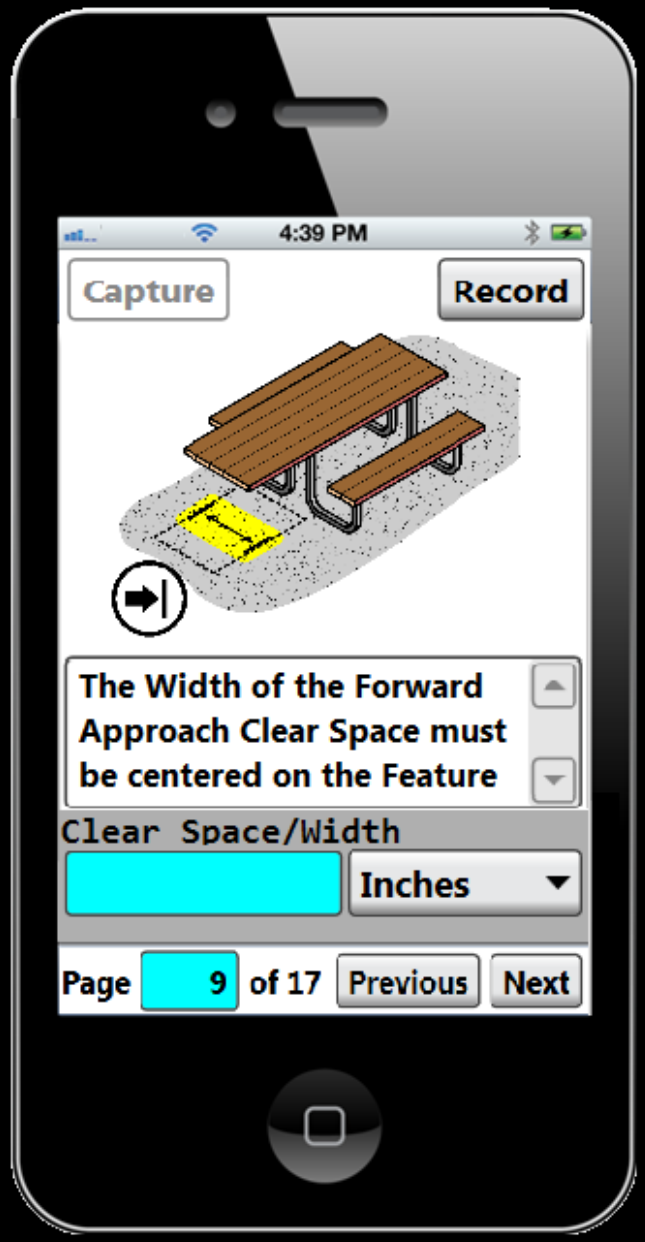
The Developed Outdoor Recreation Assessment Process (DORAP)

Beneficial Designs

research/design/education

Designing beyond the norm to meet the needs of all people.

Developed Outdoor Recreation Assessment Process



Tools Required

Smart Level

Tape Measure

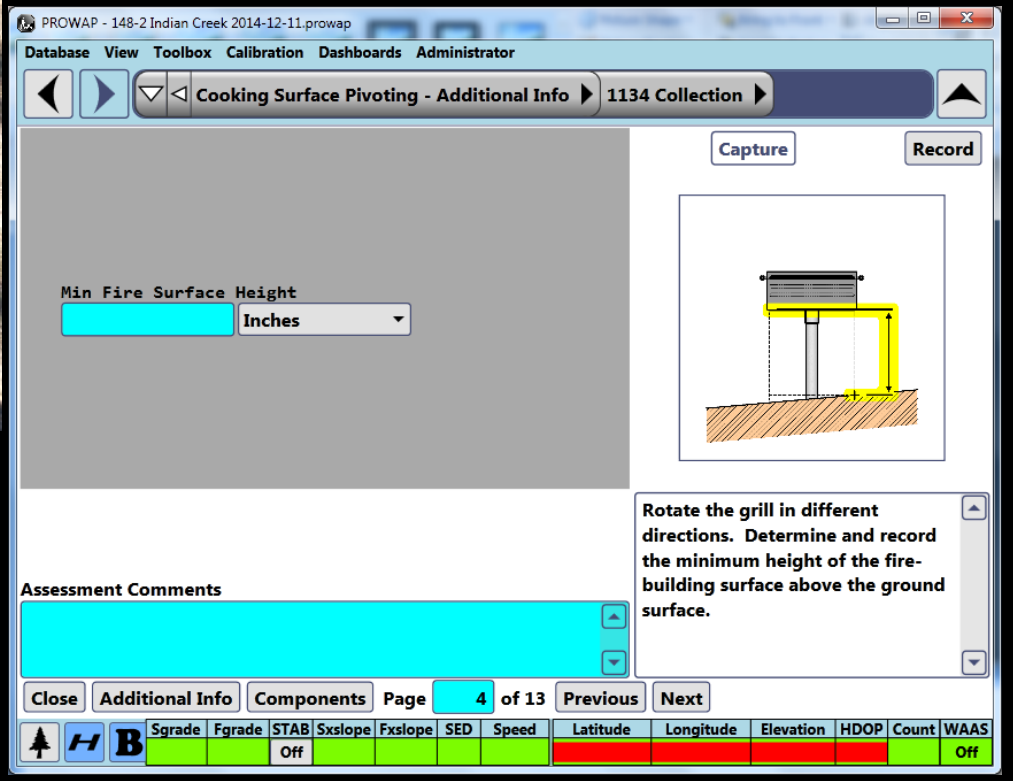
Roll-a-Wheel

Force Gauge

GPS (Smartphone)

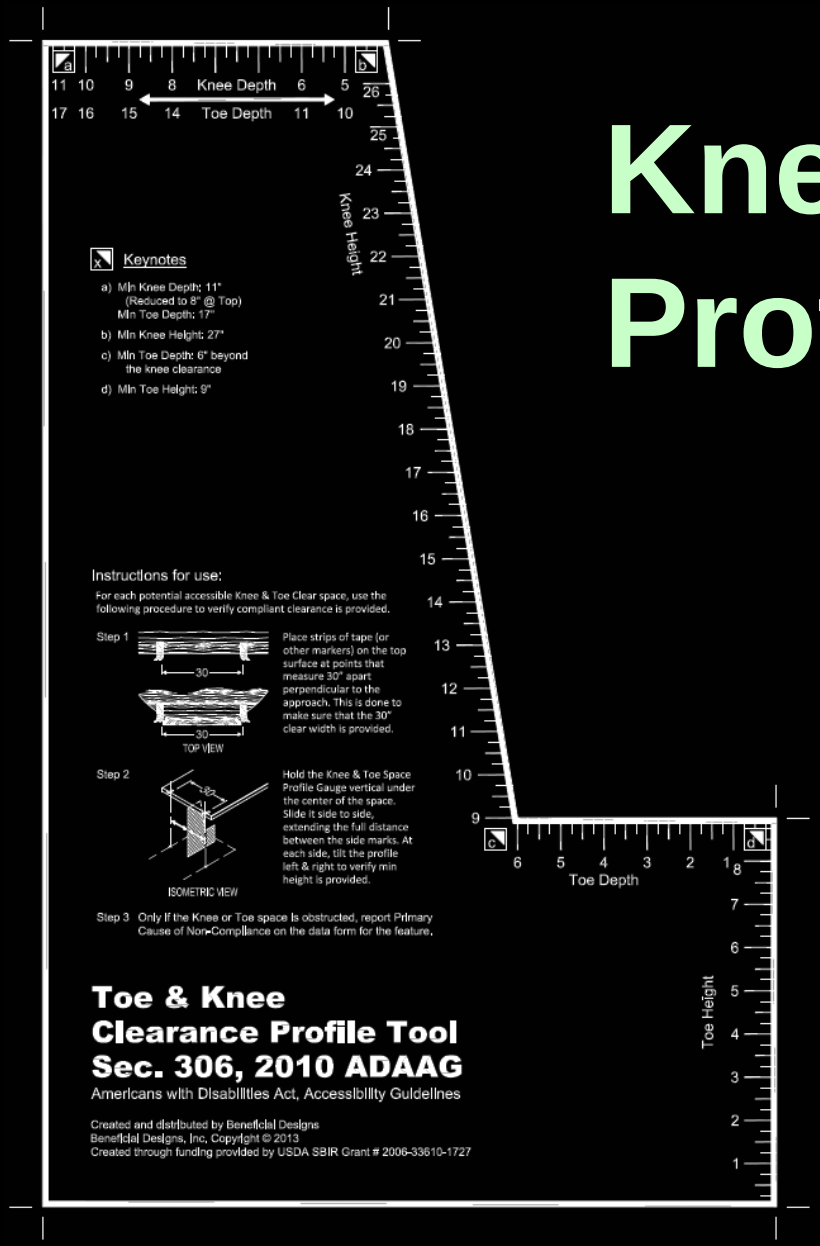
Paper Data Forms

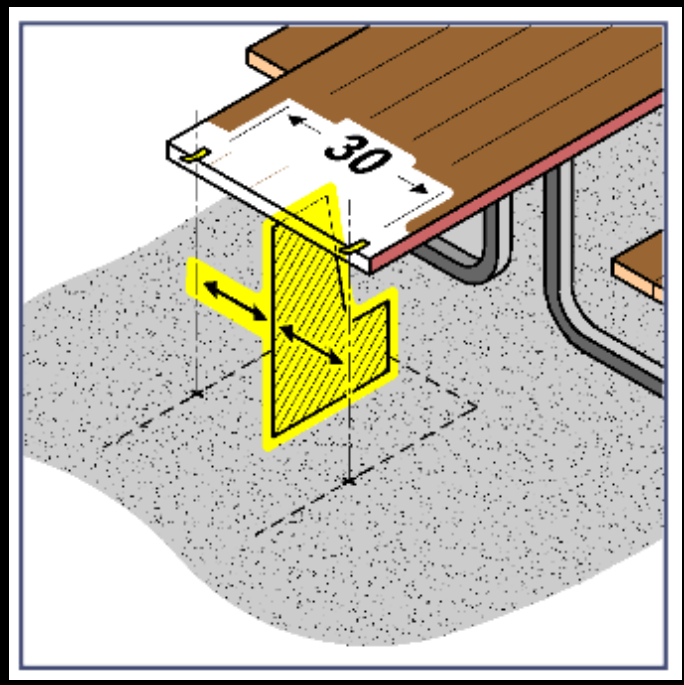
DORAP for Laptop PC



DORAP for mobile devices

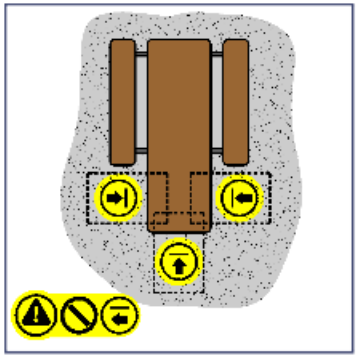
Knee & Toe Clearance Profile Tool





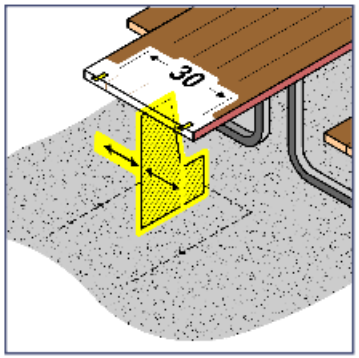
BD Profile Tool

DORAP for mobile devices

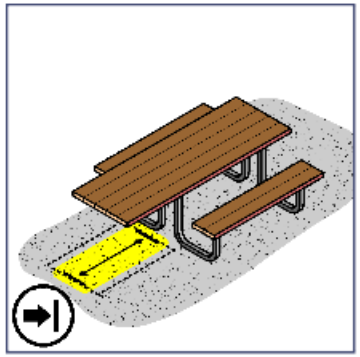


Specify the Approach Type

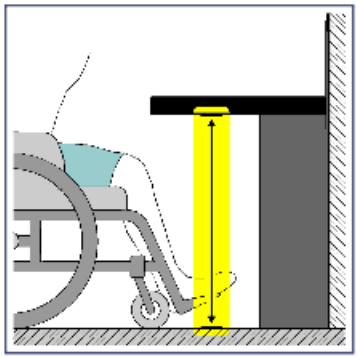
Verify that a Clear Space is positioned for Forward Approach to Tables



Using the appropriate profile, verify that the minimum clear space is provided below the table surface at each wheelchair space provided



The Length of the Parallel Approach Clear Space must be centered on the Fixture



Measure the Vertical Distance from the Ground Surface to the top of the Knee Clearance

Base Components

Elements typical of most features

- Clear Spaces
- Wheelchair Space
- Operable Parts
- Dimensions

Clear Spaces

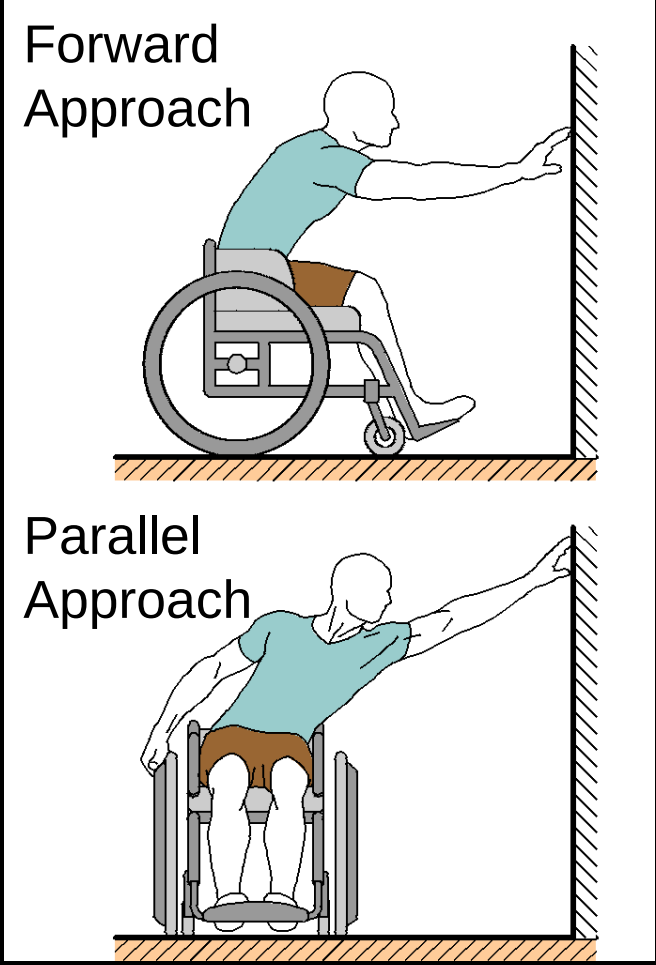
Two types of Clear Spaces

Clear Space to access a feature

Clear Space around a feature

Clear Space to Access a Feature

Length and Width

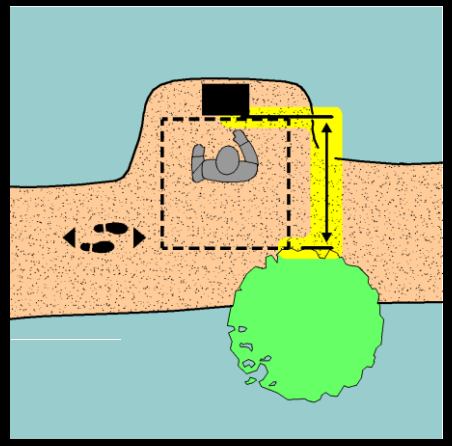


Determine the Approach Direction that a user would typically use to access the feature

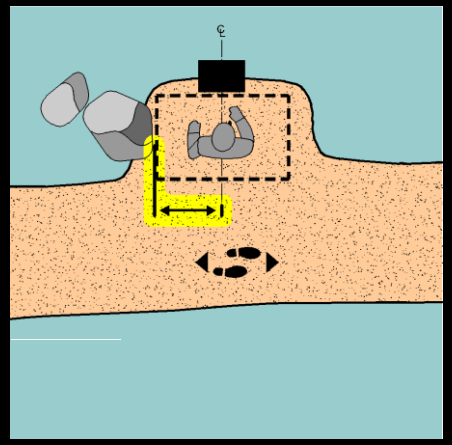
This determines the direction of the Path of Travel

Clear Space to Access a Feature

Length and Width



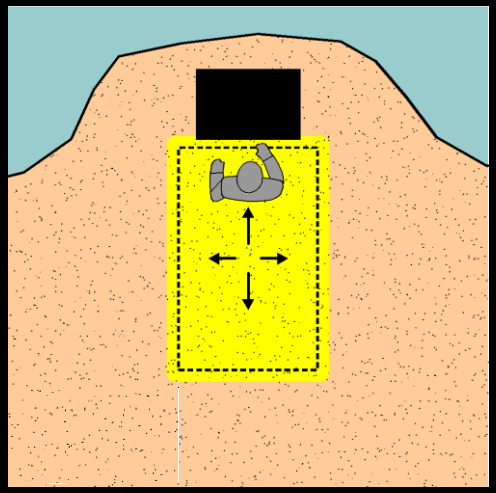
Length is always parallel to the Path of Travel. Measure from the front of the object to the nearest obstruction



Width is always perpendicular to the path of travel. Measure from the center of the feature to the nearest obstruction

Clear Space to Access a Feature

Grade and Cross Slope



Select and measure the typical grade and cross slope within the clear space to access the feature.

This can be done by standing back and squatting down to look at the clear space from approximately 10 feet away like a golfer

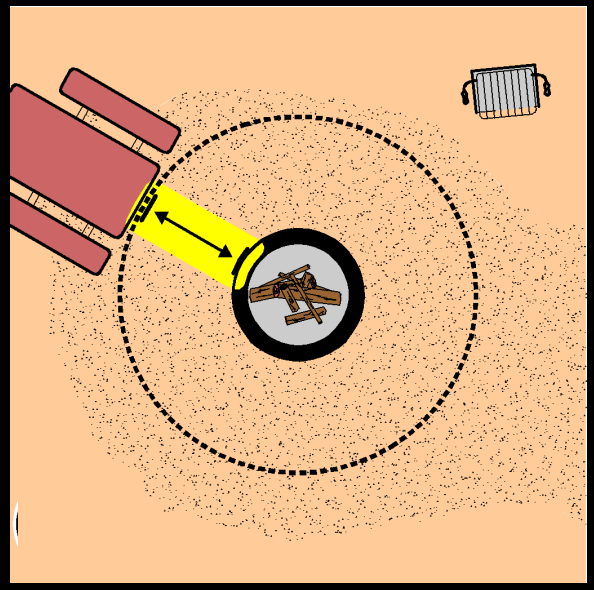
Clear Space to Access a Feature

Max Grade and Max Cross Slope

If and only if there is a portion of the clear space that has a different grade or cross slope than the typical grade or cross slope, measure and record this as the maximum grade or cross slope.

Clear Space Around a Feature

Width

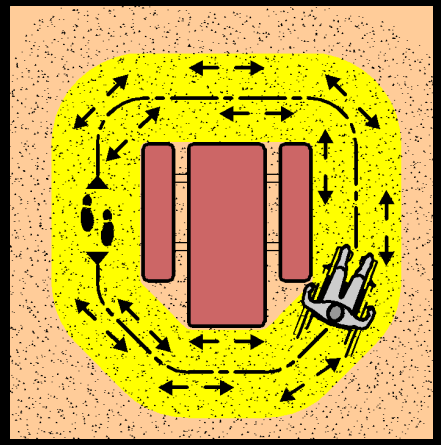


Measure the width from the edge of the feature to the nearest obstruction.

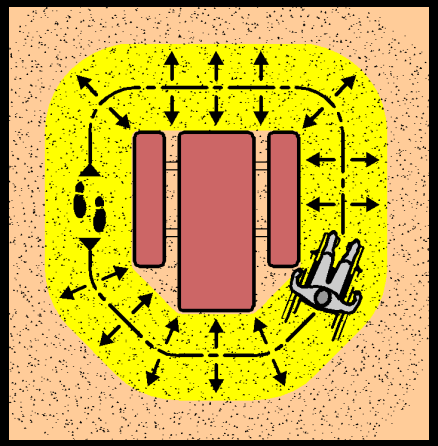
This is the Min Clear Width

Clear Space Around a Feature

Grade and Cross Slope



Grade is the slope along the path of travel around the feature



Cross Slope is the slope away from the feature

Clear Space Around a Feature

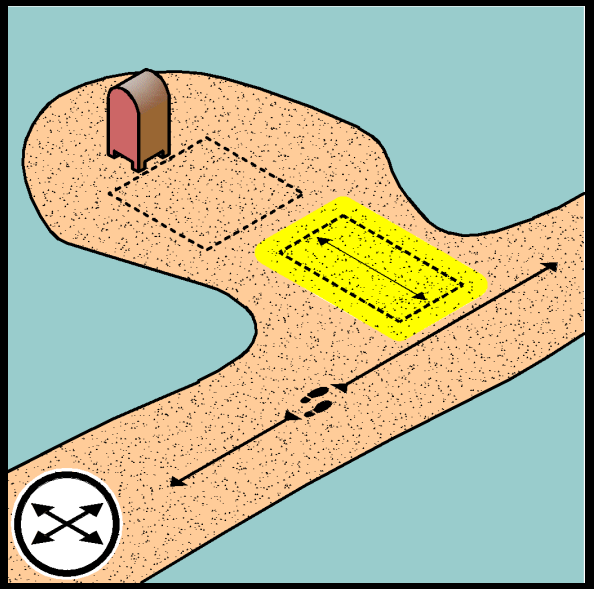
Grade and Cross Slope

Select and measure one location along each of four sides of the feature which represent the typical grade and cross slope along that side of the feature.

This can be done by standing back and squatting down to look at the clear space from approximately 10 feet away like a golfer

Clear Space Observations

Connected to an Access Route?



Is the clear space connected to or overlapping an access route or another clear space

Collection varies slightly between feature types, some can overlap and others must be adjacent without overlap

Clear Space Observations

Connected to an Access Route?

The Clear Spaces around each of the three features in this picture are overlapping

Clear Space Observations

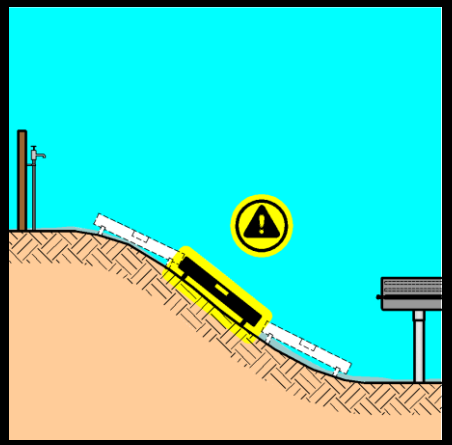
Connected to an Access Route?

The path of travel between the Grill and the Picnic Table in this picture must comply with the ORAR requirements

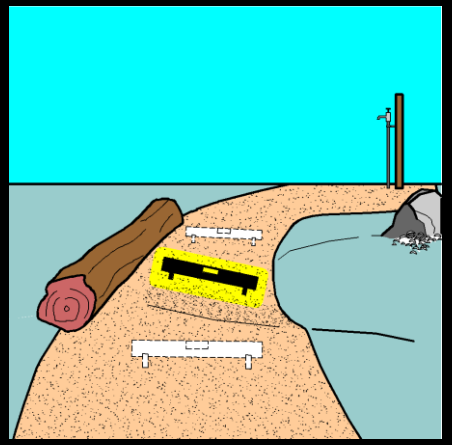
Clear Space Observations

Connected to an Access Route?

Within the Access Route Component



Identify the Maximum Grade and Maximum Cross Slope of the Access Route between features

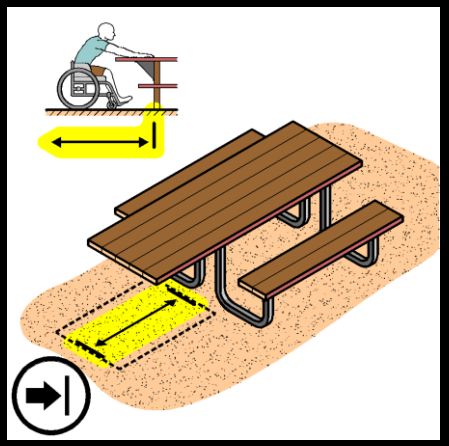


Wheelchair Space

Some features require that a Wheelchair space be provided to ensure that a person using a mobility device can sit close to the feature. Wheelchair spaces are required to provide Clear Ground Space, Unobstructed Knee Clearance, and Unobstructed Toe Clearance

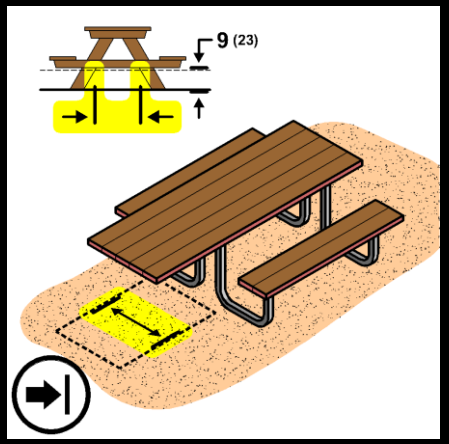
Wheelchair Space

Clear Ground Space



Required to be Forward Approach

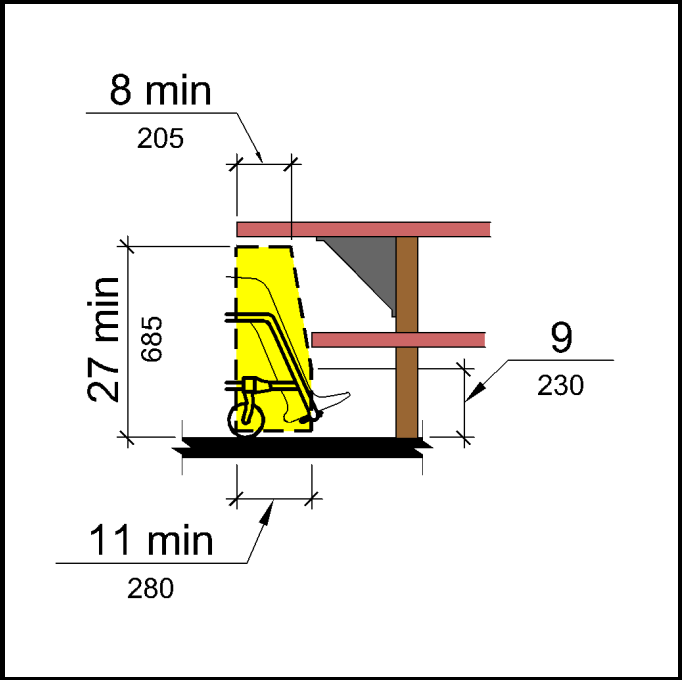
Length is from the obstruction at the table to the nearest obstruction



Width is typically between the two benches or protruding elements of the table frame

Wheelchair Space

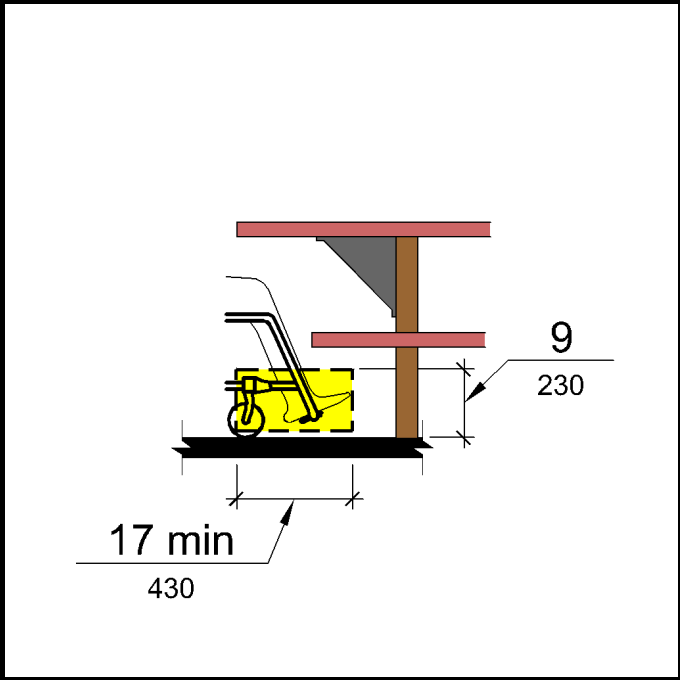
Unobstructed Knee Space



Must be a minimum of 8 inches deep at 27 inches above the ground surface, **AND** 11 inches deep at 9 inches above the ground surface

Wheelchair Space

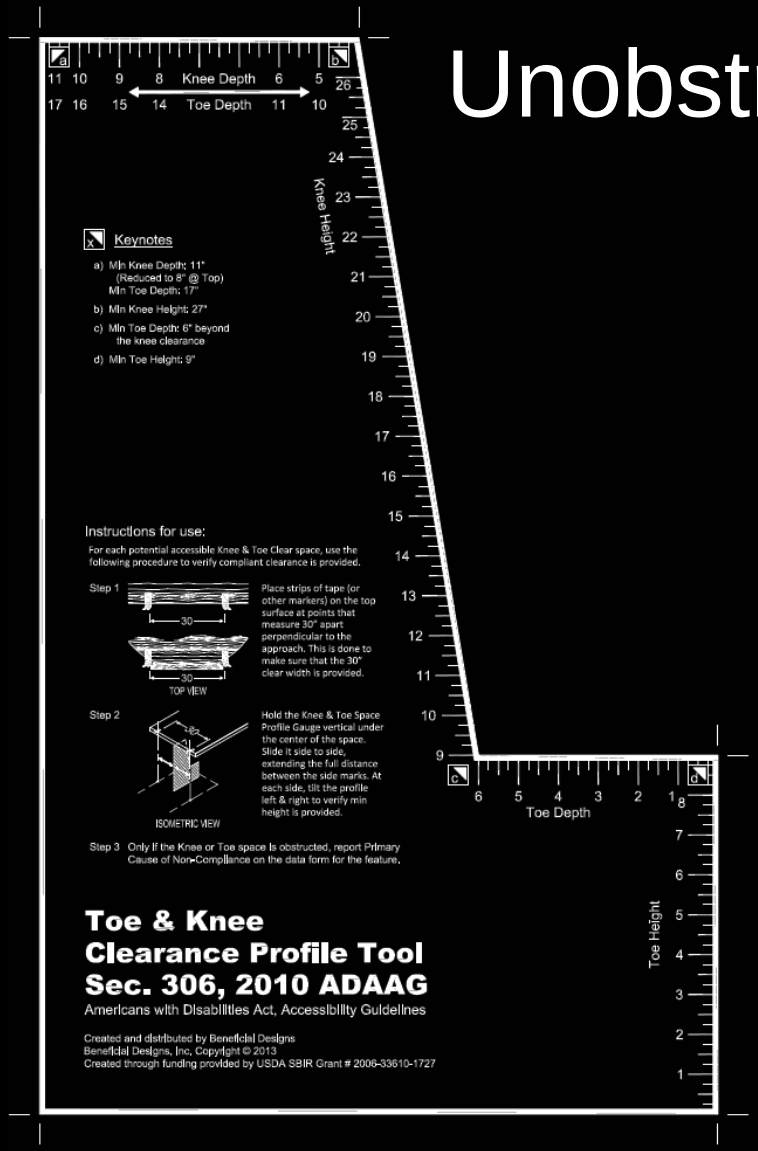
Unobstructed Toe Space



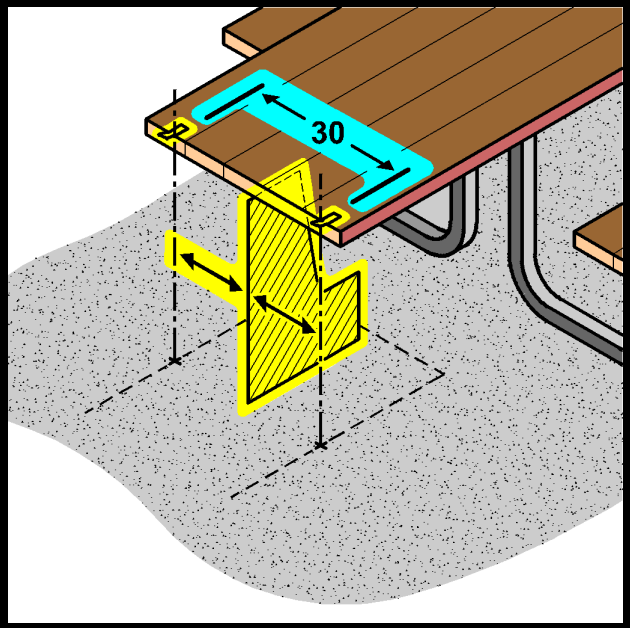
Must be a minimum of 17 inches deep and extend at least 9 inches above the ground surface

Wheelchair Space Profile Tool

Unobstructed Knee & Toe Space



Use of the Profile Tool



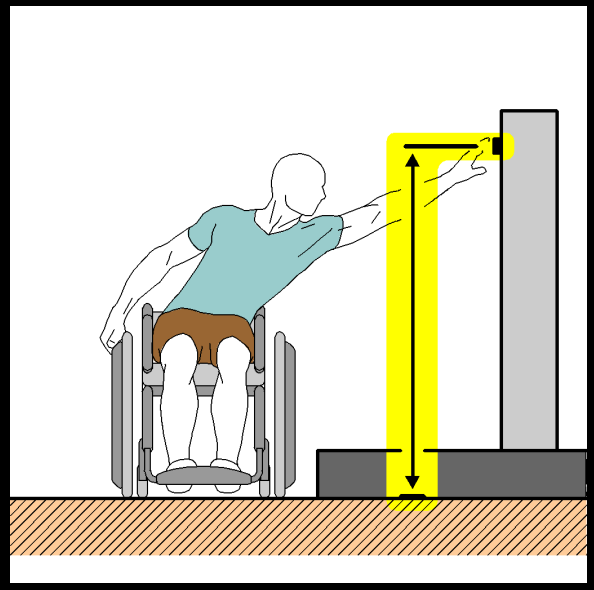
Operable Parts

Elements with Operable parts such as handles, levers, and latches, must comply with the technical requirements of sections 309.3 and 309.4 of the ABA Standards.

If there is an exemption, compliance is required to the extent practicable

Operable Parts

Height of Part / Reach Range

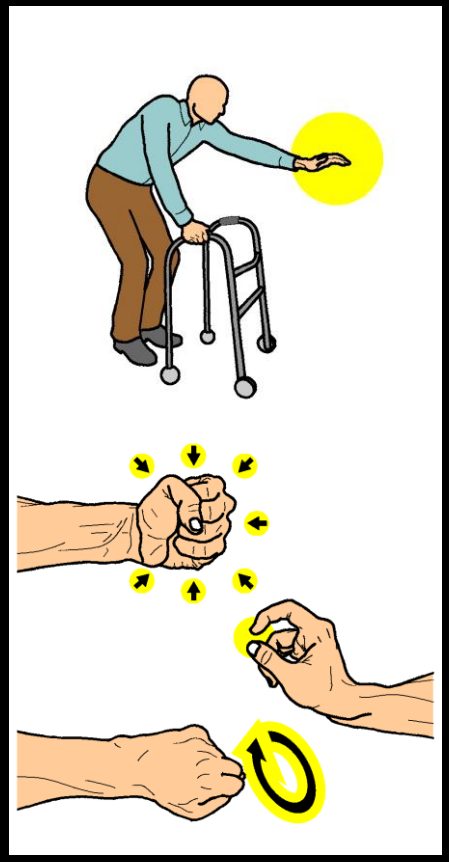


Measure the height from the ground surface to the operable part.

Typically, the height of an operable part, when the clear space is unobstructed, is between 15 inches minimum and 48 inches maximum

Operable Parts

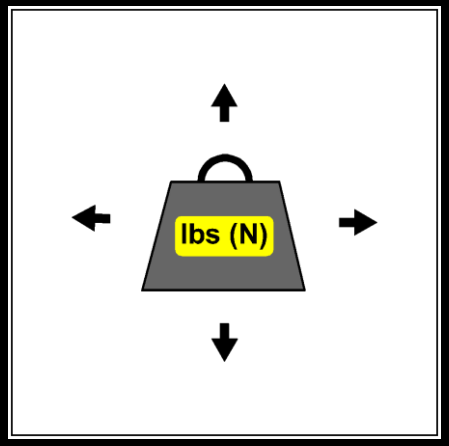
Operation requirements



Must be a operable with one hand, AND must not require tight grasping, pinching or twisting of the wrist

Operable Parts

Operation requirements



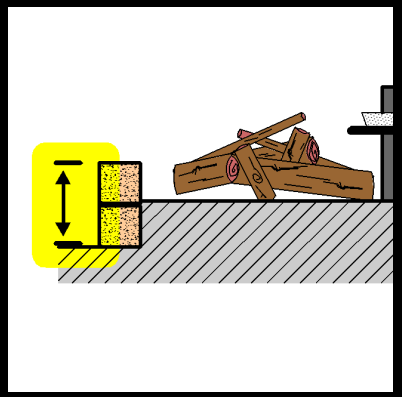
Must NOT require more than 5 lbs of force to operate the part

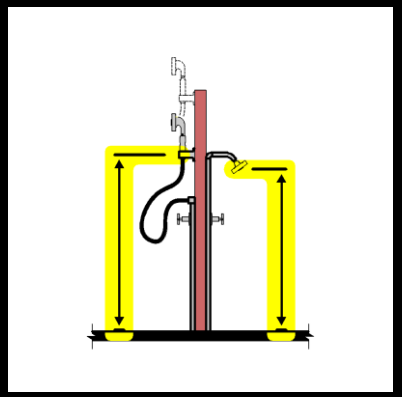
Use a force gauge or a fish scale to measure the amount of force required to operate the part

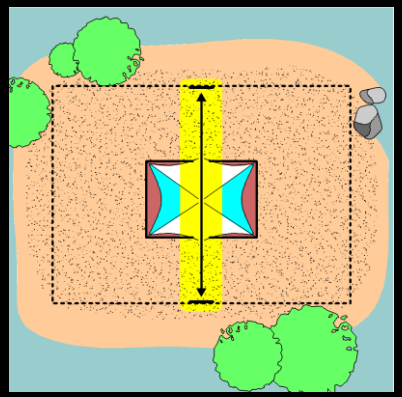
Dimensions

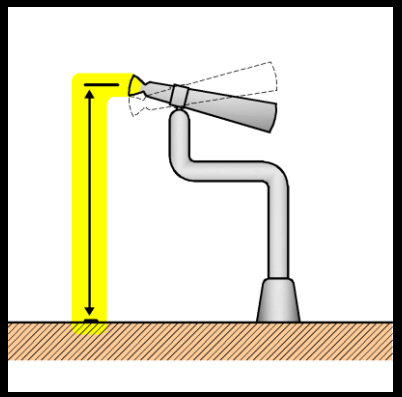
Dimension measurements are required at nearly every feature

Each measurement is defined within each feature



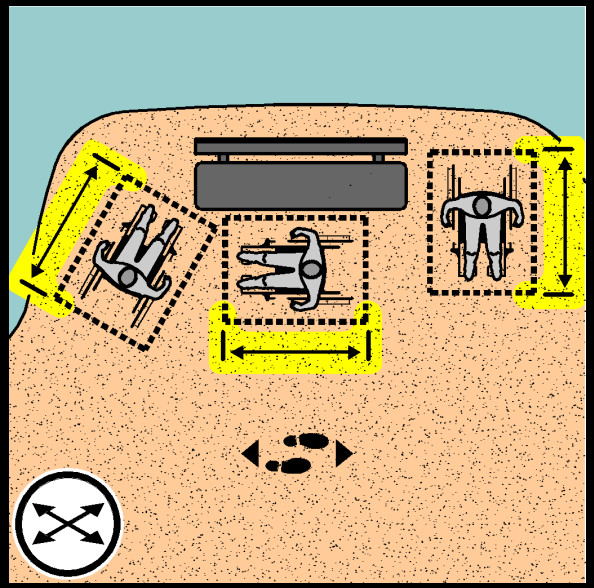






Atypical Measurements…

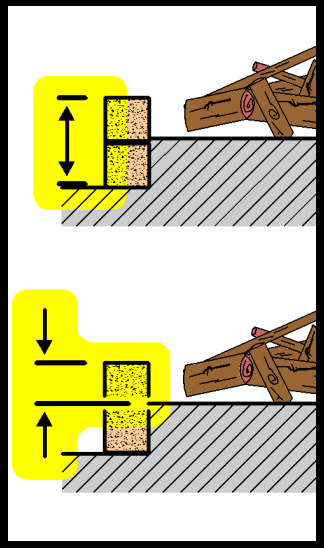
At benches, the Clear Space can be oriented in any direction adjacent to the bench, so long as it does not overlap the ORAR, trail tread, or another clear ground space



Atypical Measurements…

At Fire Rings, the surface height is required to be 9 inches above the adjacent ground surface.
Two measurements are required

"Edge Height" and "Inside Depth"

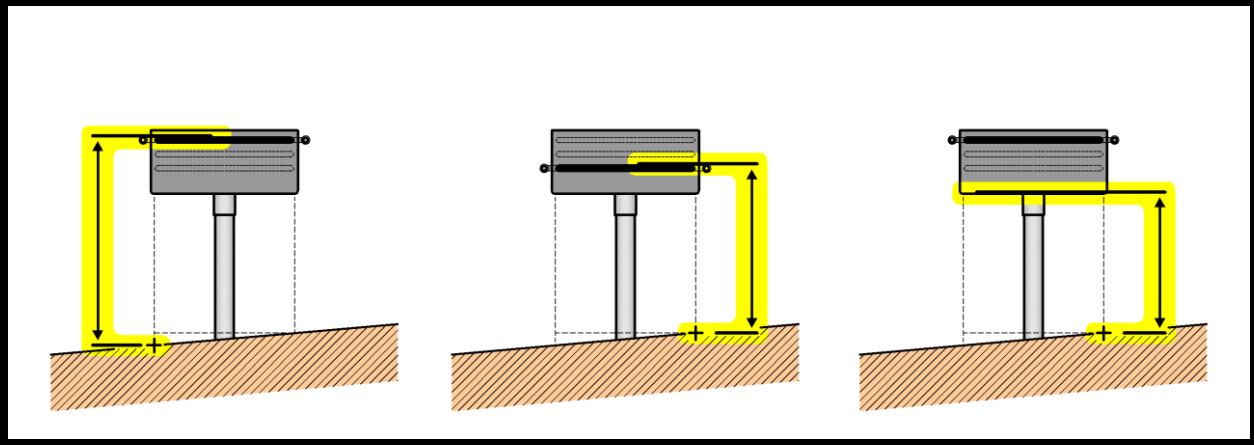


Atypical Measurements…

At prefabricated Fire Rings or Grills, the “Edge Width” measurement may not seem appropriate, but is required to verify that the max width is conforming at fire rings or cooking grills.

Atypical Measurements…

At pivoting grills, the grill must be rotated to verify minimum and maximum heights when the clear ground space is sloped or uneven



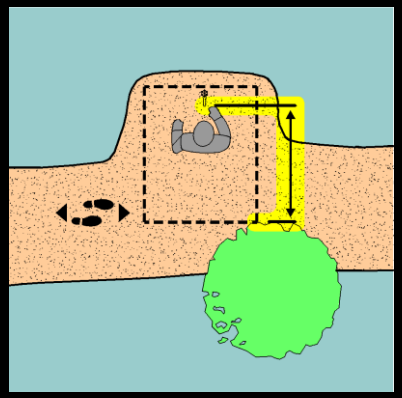
Atypical Measurements…

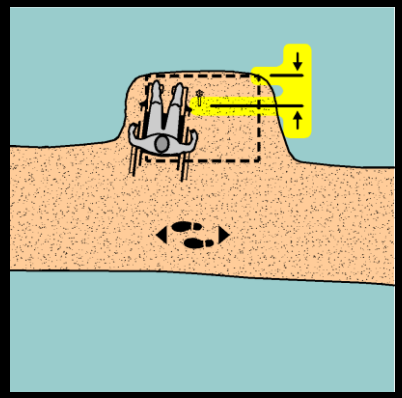
At Tent Pads, the Clear Space “Grade” and “Cross Slope” Measurements are taken around the edge of the tent pad. This is to accommodate where a user would have to traverse to erect their tent

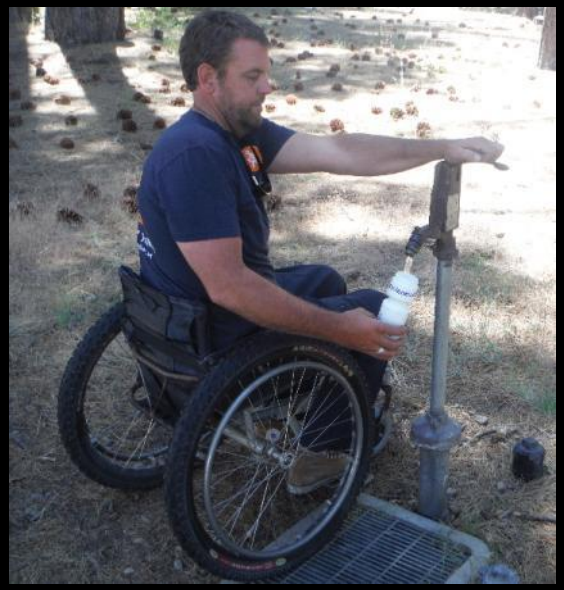
Atypical Measurements…

At Water Hydrants, the clear space is to be measured such that the water spout is located between 11 and 12 inches from the rear center of the clear space. Again requiring two measurements.

"Width Front" and "Width Rear"







Acknowledgement (DORAP)

Phase I & II funding for the Developed Outdoor Recreation Assessment Process was provided by the U.S. Department of Agriculture through the Small Business Innovation and Research program Grant number 2013-33610-21051

Beneficial Designs, Inc.

Minden, Nevada

www.beneficialdesigns.com
trails@beneficialdesigns.com
775.783.8822 voice
775.783.8823 fax

Working toward universal access
through research, design & education